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ABSTRACT

The multiple disabilities, both remediable and adjustable, which may be associated with deafness are defined and comments are offered on the trend away from the "medical model." Incidence figures for the various disabilities are given, and the problems of diagnosis and ascertainment of the educational needs of each individual are considered. Current programs for the multiply handicapped deaf are discussed in terms of preschool, school, and post-school programs and recommendations are made in regard to teachers, ancillary personnel, and prevention. (RJ)

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Urbana

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Introduction

The great increase in recent years in the numbers of deaf children with additional handicaps is one of the most urgent problems confronting those concerned with education of deaf individuals. The numbers of such children have risen to more than 8000 in 1968-69 (Rawlings and Gentile, 1970); up from 1069 in 1954 and 3050 in 1960 (Weir, 1963). The relative incidence of multiple disabilities among deaf children has also grown, and is unlikely to decline in the near future (Vernon, 1970).

This review provides some definitions which have frequently been used; surveys the (presently incompletely documented) incidence of multiple disabilities, outlines some programs for multiply handicapped deaf children which are currently in existence; and suggests some principles which could be used in establishing more such programs and in selecting children to be placed in them; and discusses problems in providing suitable personnel for these programs; as well as some of the more pressing research needs in this area.

A summary of broad recommendations of action to meet some of the needs surveyed follows this Introduction. These recommendations should be considered minimal, rather than exhaustive. One of the most urgent needs in this area is a detailed survey of the needs for programs, personnel and research for multiply disabled deaf children and projections of such needs for at least the next decade.

Summary of Recommendations

Definitions

That consideration be given to commissioning a report on definitions of multiple disabling conditions and methods of reaching sufficient agreement on such definitions to allow for establishment of appropriate educational programs.

Incidence

1. That an adequately sampled survey, using clear definition of terms, be conducted to ascertain the overall incidence of multiple disabilities among deaf children and the incidence of these multiple conditions severally. This study would need to be repeated at appropriate regular intervals.

2. That schools for deaf persons be encouraged to set up appropriate programs for close screening for lesser handicaps, particularly in the visual area, and that monies be made available by appropriate agencies for such programs.

Diagnosis and Ascertainment

1. That a series of papers outlining the available provisions for multiply disabled deaf children be commissioned for publication in suitable public and professional outlets. Such papers should be regularly updated to keep people aware of changing provisions. (An example of what is required in the area of mentally retarded children with hearing impairment has already been published by Lloyd and Burrows, 1967).

2. That centralized agencies be established in suitable centers. These agencies should be responsible for the upkeep of a register of multiply disabled children (both known and "at risk"), and the diagnosis and ascertainment of multiple handicaps and the co-ordination of programs and facilities for such children.

3. That such agencies be responsible for the co-ordination of regular screening programs in public schools, and the disposition of cases arising therefrom.

4. That a series of workshops be regularly held to keep administrators and faculty of schools for the deaf aware of programs and procedures to enable them to offer better services to multiply disabled children in their own schools.

Current Programs

1. That existing facilities for preschool parent guidance and counseling of deaf children be utilized for multiply disabled deaf children, and that funds be provided by appropriate agencies for the expansion of regular staff numbers and provision of consulting specialists to meet the needs of the multiply disabled infant.

2. That personnel and funds be made available for the development of appropriate curricula, methods, and materials to enable regular classroom teachers of deaf children to better meet the needs of educable mentally retarded and learning disordered children.

3. That funds be made available for the development of programs for deaf trainable mentally retarded children in state institutions.

4. That research into the special prosthetic needs of cerebral palsied and other crippled deaf children be initiated, with a view to retaining as many of these children as possible in regular schools and classes for deaf students.

5. That funds be made available for the development of preventive mental hygiene curricula for schools and classes for deaf children.

6. That funds be made available to enable all residential schools for deaf students to establish adequate mental hygiene and therapeutic counselling centers. The shared services of such personnel should also be made available to public school systems.

7. That a number of regional centers for grossly emotionally disturbed deaf children be established. There are certain advantages to locating such centers within the structure of existing schools. The presently developing regional centers for deaf-blind children could be used as a model for such centers.

8. That the present program of regional centers for deaf-blind children be maintained and expanded as necessary.

9. That funds be made available to certain schools for deaf students and other institutions for the development of appropriate pre-vocational training programs for all classes of multiply disabled deaf children.

10. That consideration be given to the establishment of regional centers for vocational education and rehabilitation of multiply disabled deaf adolescents and adults.

11. That appropriate psychiatric facilities be made available for adult deaf individuals needing such services. The New York state program provides a model for such facilities.

Personnel

1. That a survey be conducted of the present and projected needs of numbers of teachers of multiply disabled deaf children and other personnel required for the establishment of adequate facilities for such children.

2. That workshop and summer institute programs be developed to provide regular classroom teachers of deaf pupils with greater skill in teaching techniques and materials development to allow them to better meet the individual needs of all deaf children, but particularly those with learning or behavior disorders and the educable mentally retarded deaf child.

3. That the number and type of training grants from appropriate agencies be increased to train sufficient teachers and other personnel to meet the present and projected needs of multiply disabled deaf children.

Prevention

1. That appropriate agencies be continually funded for basic research in areas related to medical prevention of multiply disabling conditions.

2. That funds be made available for suitable programs of mass publicity for such preventive measures as the rubella vaccination program, and other programs of maternal and infant health and welfare.

Definitions

The definition of deafness for educational purposes presents some difficulties. One needs to account not only for the degree of auditory dysfunction, but also for such factors as age at onset, type, and so on (Myklebust, 1964). These difficulties may be by-passed by defining, not deafness itself, but programs for needs of different classes of children with impaired hearing (Board of Education, 1938; Holt, 1956). These programs fall into three major categories:

> Class I. Programs for children with impaired hearing whose needs can best be met in a normal school setting (with or without amplification) without special help from a trained teacher of deaf children.
>
> Class II. Programs for children with impaired hearing whose needs can best be met in a normal school setting with assistance from a trained teacher of deaf children whether (a) on a peripatetic basis, or (b) in a special class.
>
> Class III. Programs for children with impaired hearing whose needs can best be met in a special school using methods of language and speech development appropriate for the prelingually deaf child.

Audiometric data may not always be of major importance in making decisions on educational placement, since children in all three classes may range from partially to profoundly deaf audiometrically. The criteria are the educational, personal, and social needs of each child. Thus, the following definitions of multiple handicaps imply that whatever other

condition(s) may be relevant to his special needs, the child has an educationally significant hearing impairment which necessitates special provisions under Class II or III above.

It is convenient to consider other disabilities under two broad classes--remediable and adjustable. The basis of this distinction is that "remediable" conditions can usually be "removed" to a large extent by appropriate medical, educational, or other types of therapy, so that their effects upon the personal, social, and vocational activities of the individual are minimized. Conditions in the "adjustable" category presently cannot be "removed". The task of the "adjustable educator" is to design programs that enable the individual to adapt as much as possible to his disability so as to lead as personally and socially fruitful a life as is possible.

Remediable Conditions

Remediable conditions may be further divided into two groups.

1. Medically treatable. Under this category are included medically ameliorable conditions such as epilepsy, cleft palate, most visual defects, major physical illness and injury. Such problems do not require special educational treatment. (However, educational agencies may need to provide special services for hospitalized or home-bound children under this heading.)

2. Educationally treatable. Here are the major areas of disability--"Educable Mental Retardation," "Learning Disorder," "Behavior Disorder." These conditions are presently not medically ameliorable and children in these categories need their educational programs adapted to some degree.

Educable mentally retarded (EMR). In recent years there has been increasing agreement that mental retardation should not be rigidly defined in terms of IQ ranges, but that the whole functioning of the child should be taken into account (Johnson, 1967). These children may be divided into two classes--the educable and the trainable mentally retarded. This distinction is often made on the basis of the likelihood of social and economic independence in adult life (Johnson, 1967; Leenhouts, 1959). Mangan (1964, p. 565) has defined EMR deaf children thus. "Deaf children in the educable mentally handicapped range will, upon reaching adulthood, be able to function in society as relatively independent citizens."

Learning disorders (LD). There is much disagreement and confusion in the literature over the characteristics of children in this category. Many labels which seem to be defining the same pattern of behavior have been used (Chalfant and Scheffelin, 1969). Among these are brain-damaged, brain-injured, aphasic, aphasoid, psychoneurological learning disorders, minimal brain dysfunction, learning disability, Strauss syndrome, developmental imbalance, central processing dysfunction, and so on. Recent years have seen emphasis on definition of this problem in terms of "soft" behavioral signs rather than "hard" neurological signs--largely because specific evidence of brain lesion has been impossible to obtain in most cases. It is held that there are three patterns of deviant responses in children with these problems (Rapaport, 1964, cited by Cruickshank, 1967): Inadequate impulse control (resulting, inter alia, in hyperactivity, hyperdistractibility, perseveration and

lability of affect); inadequate integrative functions (in the perceptual and conceptual /verbal/ areas); and defective self-concept (low frustration tolerance, negativism and flight from challenge). The causal relationships among these three patterns of behavior are unclear. Cruickshank (1967), Vernon (1961) and McHugh (1961) should also be consulted for descriptions of the complexity of disordered behaviors frequently exhibited by these children. So many different behaviors are linked together by these writers as to make their concept of learning disorder meaningless. Many of the behaviors could well be subsumed under emotional disturbance and motor dysfunction. For our purposes "learning disorder" is perhaps best defined quite narrowly as "inordinate difficulty in learning concepts and in the manipulation of symbols, both social and verbal." In the case of the deaf child this implies difficulty in such learning over and above that imposed by deafness itself.

Behavior disorder (BD). Children with problems in this area have also been called "emotionally disturbed," "neurotic," or "psychotic." Excellent discussions of deaf children with such problems have been provided by Withrow (1964) and Thomson and Brenner (1967). Withrow discusses the category of transient anxieties and tensions due to relatively direct environmental pressures (especially during adolescence and in the process of vocational/social adjustment). He points out that these problems can usually be alleviated by warm and friendly counselling at times of stress. (See also Levine and Safian, 1958; Warren, 1961; Carr, 1961).

Thomson and Brenner are more concerned with long-term emotional disturbances due to pressures which have been internalized by the child to the extent that he is unaware of the sources of his tensions and more or less unable to control the behavior stemming from them. These behaviors may be either so severely disabling (psychotic) as to necessitate the withdrawal of the child from the regular classroom for a time, or somewhat less severe (neurotic) in that, although they may cause the individual a great deal of distress, they do not preclude his continuing "normal" social and school activities. Thompson and Brenner found that psychotic deaf children could be completely withdrawn, grossly aggressively acting out, autistic, or show other quite bizarre behaviors. Neurotic deaf children fell into five major categories:

1. Behavior problems--aggressive, destructive "acting-out".
2. "Too-good" children--withdrawn, conforming, over-polite.
3. "Slow learners"--so concerned with internal stresses that the demands of the outside world are not processed.
4. "Somatic problems"--such children display bodily symptoms which have no physical basis.
5. Combinations of all of these.

Adjustable Conditions

Besides deafness itself, the disabilities included in this category are "Gross Visual Defect," "Trainable Mental Retardation," and "Crippling Conditions."

Gross visual defect. The problems of educating the "deaf-blind" child have now been studied over a long period. They are frequently defined "negatively" (National Study Commission on Education of the Deaf-Blind, 1954; cited by Hoff, 1964, p. 789):

> A deaf-blind child is one whose combination of handicaps (auditory and visual) prevents him from profiting satisfactorily from educational programs provided for the blind child or the deaf child.

It is usual to stress that the major educational deficit of these children is still the language development problems due to the deafness.

Trainable mentally retarded (TMR). As with the EMR child discussed previously, the TMR child is often defined in terms of his ability to be socially and economically self-sufficient in adult life, "a deaf individual in the trainable group will probably need a considerable amount of supervision throughout his entire lifespan." (Mangan, 1964, p. 565). Similarly in the California Education Code (quoted by Leenhouts, 1959, p. 55), "The more severely retarded are those who may be expected to benefit from special educational facilities designed to educate and train them to further their individual acceptance, social adjustment, and economic usefulness in their homes and within /a/ sheltered environment." Children functioning at this level are not usually found in schools for deaf students, but in institutions for mentally retarded persons.

Crippling conditions. The most common of severe crippling conditions is cerebral palsy. Several types are recognized (Connor, 1967, p. 434, stresses ours):

Cerebral palsy is described as a complex neuromuscular disability, comprising motor and other symptom complexes caused by one or more non-progressive brain lesions. For some children cerebral palsy means involuntary motions of parts of the body such as the hands, arms, legs and mouth (athetosis). Other children lack balance and have poor spatial relations (ataxia). Some children . . . have a stretch reflex interfering with directed movement of parts of the body (spasticity), while a smaller number have tremor, manifested by small rhythmic movements or uncontrolled shaking.

Other less frequent crippling conditions such as spina bifida and post-traumatic quadriplegia may also need special adaptation of educational materials, media and surroundings to the needs of children suffering from them. (See also Cruickshank, 1955).

General Comments

In several areas we have noted a welcome movement away from the definition of discrete "disease" entities under a "medical model" of special educational services. This trend should be encouraged among both professional and lay persons concerned with disabled children. The complexity of the behavioral impact of multiple disabilities is such that we must move towards an "educational model" of definitions in terms of individualized educational programs for the carefully specified needs of each child. Only thus will better teaching enable the maximum amelioration of the effects of multiple handicaps.

Recommendation

It is recommended that consideration be given to commissioning a report on definitions of multiple disabling conditions and methods of researching sufficient agreement on such definitions to allow for establishment of appropriate educational programs.

Incidence

All Multiple Disabilities

Definitive studies of the incidence of deafness associated with other disabilities have yet to be done, with the result that overall national rates for such conditions cannot be given. All presently available figures suffer from two shortcomings: (a) the sample upon which the data are based may not be presumed to be representative of the population to which one would like to generalize, and (b) the definition of categories of disability and methods of data collection and reporting are not sufficiently precise to enable confidence to be placed in the degree of accuracy represented. With these limitations in mind, some tentative generalizations will be made.

Two major questions can be asked--(a) what is the incidence (of usually milder degrees) of multiple disabilities including deafness in the regular schools, and (b) what is the incidence of such conditions severe enough to require special educational treatment other than in the regular school?

The first question is important because the early diagnosis and treatment of mild disabilities can minimize their effects. General

educators should be aware that such children exist in significant numbers in regular school populations. In one study (Cruickshank, 1967) in ten school districts in an upper-middle class area of New York State, the incidence of hearing impairment with other disabilities in a "normal" population was 157 (15.6%) of 1007 children who had more than one disability. Neither the total number of all disabilities nor all children in this study is available, but 157 children in such a sample represents a sizeable group of which general educators should be made aware.

Of greater importance for this report are those children whose disabilities are sufficiently great to require special educational treatment. A number of interesting, though fragmentary, reports are available.

Doctor (1970, p. 405) reports that there were 46,997 children being given special educational treatment because of hearing impairment as of October 31, 1969. Of this number 919 (2%) were said to have another disabling condition. The criteria for designation of these children are not clear, but it would seem that the numbers include only those deaf children placed in a class which is specifically for deaf children with additional disabilities. As such, it appears to represent a gross underestimate of multiply-disabled deaf children as defined above. It is not possible from these data to educe the relative contributions of the various additional disabilities to this total.

The data reported by Rawlings and Gentile (1970) might represent a more accurate estimate. When corrected for the number of students for whom data were not reported, Rawlings and Gentile found that 69.5% of 21,130 deaf students had no other disabling condition, 21.9% had one other

disabling condition, and 8.6% had two or more additional disabling conditions--a total of 30.5% or 7,043 deaf children with one or more additional disabilities. They warn that their figures over-represent residential school pupils. Since, in general the more severely disabled pupils are in residential schools, and since the more severe the "primary diagnosis," the greater the number of other disabling conditions (Richardson and Higgins, 1964), 30.5% may be somewhat of an overestimate for the country as a whole. Allowing for this problem, it could be estimated that approximately 25% of all deaf children in this country have another disability, at least as "additional disability" is defined by Rawlings and Gentile (for their categories, see Table 1). This represents almost 12,000 children.

It is also necessary to know the distribution of the types of disabilities within this population of multiply disabled deaf children. Table 1 shows the distribution of educationally significant multiple disabilities found by Rawlings and Gentile. (It should be noted that the category "Mental Retardation" in Table 1 presumably only includes the EMR as defined above.) The original Rawlings and Gentile categories of "Emotional Problems" and "Behavioral Problems" may be collapsed into what in this report are called "Behavior Disorders." "Perceptual Motor Disorders" may roughly correspond to "Learning Disorder" as defined above. It is not clear whether "Severe Visual Defect" corresponds to "Deaf-Blind" as defined above. It should also be noted that the reporting schools were given no definitions to guide their inclusion of children under these categories (Rawlings and Gentile, p. 25, App. II). Generalizations of these data should accordingly be treated with caution.

Table 1

Number and Rate of Additional Handicapping Conditions Among Hearing Impaired Students Enrolled in Participating Special Educational Programs: United States 1968-69 School Year*

Additional Handicapping Conditions	Total Number of Reported Conditions	Number of Conditions per 1000 Students	Number of Times Condition Reported as the Only Additional Handicap	Number of Times Condition Reported in Combination with Other Handicapping Conditions
Total	8,871	419.8	4,620	4,251
Cleft lip or palate	153	7.2	95	58
Severe visual	883	41.8	458	425
Mental Retardation	1,700	80.5	1,004	696
Emotional problems	1,403	66.4	563	840
Behavioral problems	1,225	58.0	475	750
Perceptual motor disorders	1,169	55.3	544	625
Cerebral palsy	708	33.5	414	294
Heart disorders	186	8.8	100	86
Other	1,444	68.3	967	477

*From Rawlings and Gentile, 1970, Table G, p. 6.

Another major study in the area of multiply disabled deaf children is that of Vernon (1969). He reports incidence figures considerably higher than those of Doctor or Rawlings and Gentile. He presents a great deal of data concerning the extent of each of the disabling conditions in association with deafness, but it would seem that his definitions of conditions are much broader than those used in this report. For example, he found 22.1% of visual defects in association with deafness; 21.2% of emotional disorder; 24.3% of "aphasoid conditions" and 25.9% of cerebral palsy, etc. This very high incidence is due to the fact that Vernon looked at only a very narrow range of etiologies of deafness--ones which apparently cause a very high rate of multiple disabilities. No attempts should be made to generalize these data because they are based only upon 37.3% of a sample drawn from only one school. No data are reported for the 30.4% of cases where the cause of deafness was unknown, or the 32.3% of cases where a "dubiously valid" etiology was given. It seems likely that the distribution of multiple disabilities among this group could be quite different from that reported.

Various other studies of deafness in association with another major disability have also been reported.

Mental Retardation. Of (presumably) educable mentally retarded children in schools and classes for deaf students, Frisina (1955) found the incidence in residential schools to be 11-12%; Calvert (1969) found 20-25% of deaf children had more than one disability; 51% of these were mentally retarded (both educable and trainable); Weir (1963) studied schools and classes and found a rate of up to 11% of EMR; Anderson, Stevens and

Stuckless reported a rate of 19% of educable mentally retarded children in residential schools for deaf students; of whom 24% were said to have more than two disabilities.

Concerning trainable retarded deaf children in institutions, several studies are available. Unfortunately most of these deal only with one institution's population. The relative homogeneity of such institutional populations, however, increases the generalizability of these findings. Rigrodsky, Prunty and Glovsky (1961) found that 25% of the population of the Vineland School had "significant" hearing losses; in a number of other institutions Johnston and Farrell (1954) found 24%; McPherson (1952), 24% of "deaf or hard of hearing" of school age; Lloyd and Reid (1967), 15%; presumably different criteria of "significant hearing loss" were used by Johnson (1964) and Leenhouts (1959) who reported 3% and 15% respectively.

Visual defects. The latest available figures on the incidence of deaf/blind children (as of June, 1969, Calvert, 1969) were that there were 125 such children in the country in "appropriate educational placement," 425 of school age, but not in an appropriate educational placement; and 1250 such children of preschool age yet to be placed in schools.

Some rather disturbing figures concerning lesser (but still educationally significant) visual defects are also available. Suchman (1968) found that of 103 children in a residential school for the deaf 58% had either subnormal visual acuity, visual anomalies, or both. Of the 25 children with subnormal acuity (down to 20-70 vision) only one had been provided with glasses. ("To the best knowledge of the examiners, the visual acuity defect of the remaining 24 children had not been previously

observed." /p. 36/) Of the 17 children with visual anomalies, 13 were potentially correctable--only one had been. Of a total of 54 potentially correctable conditions, 47 had not been. Lawson and Myklebust (1970, p. 18) report similarly, "Approximately one-half of the sample, irrespective of age, had eye defects which might be expected to be influential in terms of the child's learning and adjustment." Of the children with correctable conditions, 16.2% did not have glasses.

It is apparent that schools for deaf students need to look more carefully for lesser visual defects which could be affecting the progress of a significant number of children.

Emotional disturbance. No adequate data are available for these conditions. Calvert (1969) found that almost 50% of his multiply disabled group (n = 984, from California, with ages less than 15 years) were reported to have "emotional disturbance" as well as deafness. It seems likely that this group were not so severely disturbed as to cause their exclusion from schools and classes for deaf students.

Cerebral palsy. Vernon (1969) has stated that most cerebral palsy with deafness is caused by either Rh factor incompatibility or prematurity. His figures may be reasonably reliable in this area, and his reported incidence of 16.5% may represent an upper bound on the incidence of this condition.

Learning disorders. The difficulties of reaching agreement on a definition of this term have precluded any accurate estimate of its incidence. Vernon's (1967) 24.3% incidence of "Aphasoid Conditions" almost certainly represents an over-estimate. Dr. James Chalfant of the

Department of Special Education at the University of Illinois puts the incidence of learning disorders among hearing children at "something less than 2%" (personal communication). The incidence among deaf children will probably not be less than that, and is likely higher.

General Comments

It is clear that the general picture of the statistical determination of the incidence of deafness associated with other disabilities is far from satisfactory. Most available studies have either used sampling procedures which preclude generalizability of their findings, or have used vague and unsatisfactory definitions of associated disabilities.

Certain trends in the data available indicate that 30% may represent an approximate upper limit on the incidence of deaf children with one or more other disabilities; approximately 11% of all deaf children may be classed as EMR; about 25% seems an upper limit on the incidence of significant hearing impairment in institutionalized mentally retarded individuals; the occurrence of deaf-blind children is well documented; new evidence indicates that there is a much higher incidence of correctable lesser visual defects among deaf children than heretofore suspected; the incidence of lesser and severe emotional disturbance among deaf children is not available, as many as 30% of deaf children may have some degree of disturbance in this area; cerebral palsy occurs in something less than one-sixth of the population of schools for deaf students; the incidence of learning disorders is currently not ascertainable.

The trend of these incidence figures is also of considerable importance. It seems clear (Myklebust, 1964; Vernon, 1967a, 1967b, 1967c; 1969) that the incidence of children becoming deaf from rubella, Rh factor incompatibility and prematurity is rising. Although better obstetric and pediatric care is saving children who formerly would have died, these children are surviving with multiple handicaps and Vernon has established that these three etiologies are significantly more associated with multiple disabilities than are other causes of deafness. Despite increasing vaccination against rubella, it seems unlikely that the incidence of deafness from these combined sources will significantly decrease in the near future. Accordingly, the number of multiply disabled deaf children will probably continue to increase for some years yet.

Recommendations

1. That an adequately sampled survey, using clear definition of terms, be conducted to ascertain the overall incidence of multiple disabilities among deaf children and the incidence of these multiple conditions severally. This study would need to be repeated at appropriate regular intervals.

2. That schools for deaf persons be encouraged to set up appropriate programs for close screening for lesser handicaps, particularly in the visual area, and that monies be made available by appropriate agencies for such programs.

Diagnosis and Ascertainment

Given a definitive understanding of the various types of disabilities which may be associated with deafness, it is next necessary to ensure that children with such conditions be found and placed in suitable educational programs. This process may be conveniently divided into two stages: (a) Diagnosis and (b) Ascertainment. It should not be necessary to stress the importance of the earliest possible entry to this process for multiply disabled deaf children. The earlier ameliorative programs can be started, the better the prognosis for the child.

Diagnosis

Diagnostic attempts seem to fall into two broad areas, medical and psycho-educational.

Medical. Besides deafness itself, conditions such as visual defects, cerebral palsy, and severe mental retardation are usually diagnosed by family physicians or pediatricians or well-baby clinics. Such conditions as cleft palate, spina bifida, epilepsy, etc., are also usually discovered at this level of medical care. Children with severe multiple disabilities are usually readily recognizable and are often diagnosed at an early age.

However, there is often a break-down beyond this point in that such primary agencies are frequently unaware of the facilities available, so that these children often either remain at home or are placed in institutions for the mentally retarded (Calvert, 1969; Burns and Stenquist, 1960). There would appear to be two major needs in this area: (a) publicity about facilities available for multiply disabled children, both to the

public (through the mass media) and to the various professionals likely to be involved with such children (through journals and in-service and initial training institutions), (b) the centralizing of reporting of such conditions to an appropriately situated regional body responsible for further disposal of these cases. One efficient method of handling this problem is the establishment of a "High-risk Register" of infants whose mothers have been exposed to traumatic pregnancies, infants with difficult birth histories, and post-natal traumas of various types, etc. The principles for the establishment of such agencies, the types of conditions which should be notified, and suitable structures for administration of regulations are now well-known and could readily be implemented (Ingalls and Klingberg, 1969; Temporary State Commission to Study and Investigate the Problems of the Deaf, 1968).

Such agencies could also be made responsible for the administration of the ascertainment process as outlined below. The Temporary State Commission to Study and Investigate the Problems of the Deaf (New York, 1968) recommended just such a system of regional consultants for physicians and parents.

Another problem that needs to be considered in the area of diagnosis is that of children with milder degrees of multiple disabling conditions who may be performing well below their optimal capacity in regular schools without their parents or teachers being fully aware of the impact of these problems. The fact that schools can often be unaware of such problems is well documented (Wishik, 1956; Richardson and Higgins, 1964). The latter survey found that the incidence of both mental retardation and

emotional disturbance were "underreported." They also bear out what was said above about the need for central agencies for co-ordinating services for multiply disabled children. Both these reports illustrate the need for extensive and regular screening surveys of regular schools to discover children with Class II multiple disabilities--those who may remain in regular schools and who may need some special help for a period.

It should be noted that such screening is also needed in schools for deaf students and other special schools and institutions. We have already noted the disturbing evidence of Suchman (1968), and Lawson and Myklebust (1970) concerning the incidence of uncorrected visual defects among deaf school children. The occurrance of other minor handicapping conditions doubtless should be screened on a regular basis. There is an extensive literature on the need for regular screening for hearing impairments among institutionalized mentally retarded populations (Peins, 1969).

Psycho-educational. Into this category fall such conditions as learning and behavior disorders and mild mental retardation, as well as milder degrees of many of the "medically" diagnosable conditions. These conditions often are not in evidence until preschool age or later and are usually first noticed by parents or teachers (Calvert, 1969; Weir, 1963; Warren, 1961; Carr, 1961). Again it is not sufficient to leave such matters to the efforts of interested teachers. Procedures for screening for such problems in school-age populations are well known and should be routinely utilized in all schools for deaf children. (For emotionally disturbed, see Bower, 1969; for remedial teaching, Otto and McMenemy, 1966; learning disorders, Myers and Hammill, 1969).

Again this is a matter of bringing these procedures to the awareness of administrators, school psychologists, counselors and teachers. Appropriate programs of publicity and training need to be initiated through professional journals, workshops, university training centers, etc. (Weir, 1963; Calvert, 1969). These efforts should be seen as of major importance. The milder degrees of handicap discovered via these methods are potentially very amenable to suitable treatment if such treatment can be made available early enough.

Ascertainment

The diagnosis of a child as suffering from multiple disabilities is not enough. It should set in motion a train of events which (a) provides for the child the educational setting and program most appropriate for his needs, (b) regularly reviews such provisions, and (c) ends only with his entering into an appropriate post-school situation. This process may be called educational ascertainment.

Ascertainment should be clearly seen as educationally oriented. The ascertainment process should be essentially concerned with evaluating the physical, intellectual, social, emotional, and academic status of the child and with designing an educational program best suited to his needs as thus disclosed. It is rare that an individual of any one professional orientation has all the diagnostic skills at his command which are necessary to adequately dispose of the various needs of the multiply disabled deaf child. For this reason the creation of ascertainment teams is necessary. The principles of establishment and organization of such

teams have been well documented by Root and Riley (1960). This paper is specifically concerned with deaf-blind children, but the principles there inherent are generalizable to all multiply disabled ascertainment teams.

1. Membership of these teams should be flexible to meet the different requirements of each child.

2. Each team should have at least one full-time member who is responsible for selection of cases, collation of reports, and the administrative disposition and follow-up of decisions. (It is often suitable for this person to be a school psychologist--preferrably one with extensive training and experience in education of deaf children.)

3. Other members of the team should include an educator of deaf children, an otologist and an audiologist.

4. Specialists from other disciplines should be freely accessible on a consultative basis. Depending on the child, these could be from other areas of special education, speech and physical therapy, pediatrics, social work, psychiatry, clinical psychology, ophthalmology.

Thompson and Brenner (1967) have similarly discussed such teams in the context of the emotionally disturbed deaf child.

The number of teams of this type needed to adequately cover the population depends upon demographic factors. Large urban centers may need several, whereas one team may cover a number of sparsely settled states. Headquarters of teams should be situated so as to involve as little expense and inconvenience as possible for parents. Since the

ascertainment process may often be extended over a period of days or even weeks (if "diagnostic teaching" is required (Mulholland, 1961)), suitable provision for transport and/or residential facilities should be made (Root and Riley, 1960). (Cost reimbursement for parents could well be considered.) This will usually mean that centers should be in large cities, but it may sometimes be appropriate to locate them in schools for deaf or blind children. Care should be taken to provide sufficient numbers of teams to enable detailed consideration of cases to be made, especially as frequent revision of all dispositions should be made to meet any change in the needs of the child.

Schools for deaf students (and other special schools dealing with deaf children) should not overlook the need for regular "ascertainment" procedures with their own children--especially in the area of tailoring programs to meet the needs of the child with special learning problems and behavior disorders (Weir, 1963; Calvert, 1969; Myklebust, Neyhus and Mulholland, 1962; Levine, 1948).

Such teams should be based around the school psychologist and audiologist and supervising teachers, with other specialist consultative help available when needed (Withrow, 1962).

Recommendations

1. That a series of papers outlining the available provisions for multiply disabled deaf children be commissioned for publication in suitable public and professional outlets. Such papers should be regularly updated to keep people aware of changing provisions. (An example of what is

required in the area of mentally retarded children with hearing impairment has already been published by Lloyd and Burrows, 1967.)

2. That centralized agencies be established in suitable centers. These agencies should be responsible for the upkeep of a register of multiply disabled children (both known and "at risk"), and the diagnosis and ascertainment of multiple handicaps and the co-ordination of programs and facilities for such children.

3. That such agencies be responsible for the co-ordination of regular screening programs in public schools, and the disposition of cases arising therefrom.

4. That a series of workshops be regularly held to keep administrators and faculty of schools for the deaf aware of programs and procedures to enable them to offer better services to multiply disabled children in their own schools.

Current Programs

It is difficult at this time to provide complete delineation of current programs for multiply disabled deaf children. Those discussed here should be considered as a reasonably representative sample of those programs that have been described in the literature. There are undoubtedly others. Programs will be considered in three areas: Pre-school, School-age, and Post-school (including vocational preparation and placement).

Preschool

Two main needs have been seen in this area: (a) family (particularly parental) counselling, and (b) initiatory activities in the areas of language, speech, audition, and speechreading development. As far as can be found from a survey of the literature, multiply disabled deaf children and their families usually must fit into programs existing primarily for the "normal" deaf infant. This is seen as desirable in the main for it allows support for the family and ensures that specialists oriented towards language development in deaf children will be readily available. Nevertheless, informal contact with several leaders in the field indicate that there is a major problem in this area. Due mainly to a shortage of suitably qualified and experienced personnel, such facilities for "normal" deaf children are not meeting the needs even of these children. Consequently "difficult" multiply disabled cases may not get the support they urgently need. Funds for the training of such personnel and establishment of more centers are urgently required.

It should be noted that facilities for one class of multiply disabled deaf children (the deaf-blind) are now in the process of development and the needs of those children are likely to be well met in the foreseeable future (Anon., 1969). Demonstration projects for preschool children include one for multiply disabled children (in the Department of Special Education, University of Illinois, Dr. Merle Karnes, personal communication). Although there is undoubtedly much research still to be done in this area, the general outlines of procedures are clear, and administrative action

could solve many problems in this area quite quickly within existing frameworks.

School-age

Large numbers of programs have been established in public schools, schools for deaf students, and other special agencies in an attempt to meet the special needs of the multiply disabled child. These programs will be here considered under the various disabling conditions:

(a) Deaf-blind. Federal funds are currently being used to develop facilities for this well-defined group and the regional service centers for deaf-blind children should be able to cope with the needs of this group (Anon., 1970). The facilities and personnel required by such centers have been extensively discussed by Hoff (1964) and Burns and Stenquist (1960).

(b) Mentally retarded deaf. Most schools and classes for the deaf have attempted to provide for the needs of the educable mentally retarded deaf child within the framework of their normal programs. It seems to be generally agreed that this is the best policy--to keep these children as close to the normal stream of deaf children as is possible via appropriate modifications of curricula (Weir, 1963; Monaghan, 1964; Mangan, 1964). Sellin (1964) has stated that the curriculum for such children should not be just "watered-down" versions of the regular curriculum, but should be specially devised to meet their special academic and social needs, and should be largely vocationally oriented. Anderson, Stevens, and Stuckless (1966) have provided an extensive and important review of the practices of

residential schools for deaf students in dealing with their educable mentally retarded pupils. They stress the need for consistent admission policies not based rigidly on IQ levels; vocationally oriented programs of high school age; and improved training of teachers to handle these children's special needs.

Trainable mentally retarded children are usually found in state institutions for mentally retarded individuals rather than schools for deaf students. In some few cases they may be found in day classes or in classes for deaf students in day schools for mentally retarded individuals. Any one of these placements could be best for a given child, depending on his adjudged capacity and potential. In general, state institutional placement should be reserved for those children who will be incapable of leading independent adult lives (Schunhoff, 1964; Mangan, 1962, 1964; Monaghan, 1964). Johnson (1967) considers that hard-of-hearing retarded children are best placed in schools for the retarded. Espeseth and Nix (1969) have expanded this into the need for four separate programs for educable and trainable mentally retarded deaf and hard-of-hearing children. There is support for this latter position in their presentation of programs in day and residential schools for deaf students and in schools for the retarded child.

A number of examples of programs for the institutionalized mentally retarded deaf child have been provided. Leenhouts (1959), James (1964) and Griffing (1969) have reported on the programs in the California State Hospitals. These programs have focused on development of language for

personal hygiene and social and vocational skills; and have aimed to fit these children (and adults) for sheltered workshops outside the institution, or, where this is not possible, for better adjustment to life within the institution. The general outlines of program requirements in this area seem to be well known.

(c) Cerebral palsied deaf. It seems in general as if ambulatory cerebral palsied children without additional major handicaps have been educated in schools for deaf individuals and the more grossly handicapped child in schools for crippled children (Porter, 1957; Vernon, 1970). Despite some controversy over methods of communication (Vernon, 1970), this arrangement appears suitable if placement is kept sufficiently flexible to meet the needs of each child. Schools for deaf students should ensure that adequate physical and speech therapy are available for such children. Schools for crippled children with numbers of hearing-impaired children would find it advantageous to form classes for the deafer of these children under a trained teacher of deaf children.

(d) Learning disorders. Very little adequate research has been done into the special needs of these deaf children. It has generally been held that they should remain within the appropriate facility for deaf students but that extensive diagnostic and remedial teaching should be undertaken to allow them to learn up to their capacity (Mangan, 1962; Withrow, 1962; Mulholland, 1962). Very good teaching in ordinary facilities would appear to take care of the needs of most of these children. Special "resource rooms" for tutorial help by specially trained teachers could be useful in

some cases. Monaghan (1964) considers that such children should not be defined as a separate group, but should receive appropriate diagnostic and remedial teaching within the "normal" school or class for deaf children. It is difficult to agree with Sortini's (1961) opting for a clinic setting for the "rehabilitation" of these children. These would seem to be essentially "learning problems" and are best handled within a normal school program.

(e) Behavior disorders. Programs for children with these problems fall into two major areas: Those treatable within a "normal" program for deaf students, and those children whose behavior is such as to require their temporary removal from regular facilities for deaf students.

There is still much to be learned regarding the handling of behavior disordered children in regular schools and classes for deaf students but the general principles of establishment of programs seem to be clear. Levine (1946; 1960) and Thompson (1964) have discussed the role of the school psychologist and school mental health clinic. Carr (1961) has presented an approach to this problem from the point of view of the classroom teacher. Withrow (1964) has outlined the establishment of a "diagnostic educational unit" in a residential school for deaf children which would involve both special "adjustable classes" and provisions for individual therapy. He has stressed the importance of involving parents, family and teachers in remediation efforts. Thompson and Brenner (1967) present a similar program and suggest that already-trained mental health personnel inducted into problems and principles of the psychology of

deafness should be used in such centers, in that it is much more expensive and time-consuming to train specialists in the education of deaf children to work in mental health fields.

Both Thompson and Brenner (1967) and Warren (1961) find a great need for special programs for the "psychotic" deaf child who needs to be temporarily excluded from regular programs for deaf students. They note that the numbers of such children are likely to be few and that regional planning for such children will be necessary. It appears that the regional centers for the deaf-blind now being established could provide an administrative model for such facilities. There are certain advantages in terms of staff utilization, availability of psychological and audiological services, etc., to establishing such units within the grounds of day and residential schools for deaf students.

All writers on this topic stress the importance of preventive mental hygiene programs in schools for deaf children (Levine, 1960; Thompson, 1964). Much research is needed into programs in this sensitive area. Sarlin and Altshuler (1968) and Landau (1968) have provided interesting new approaches in terms of group psychotherapy with deaf adolescents. The techniques of behavior modification also need to be explored as regards their application to the emotionally disturbed deaf child. (Hurwitz and Difrencesca, 1968; Brooks, Morrow and Gray, 1968; Vernon, 1970).

Post-school Problems

The academic and vocational post-school requirements of multiply disabled deaf individuals cover an enormous range. On the one hand there is a small number of deaf people who will be capable of entry to Gallaudet College (from the ranks of the emotionally disturbed or cerebral palsy group), but on the other, there will be numbers of grossly retarded children who will never be able to work at anything but the simplest tasks in an institutional setting.

For all others there must be a wide range of pre-vocational training and preparation for the social demands of regular employment, whether in sheltered workshops or in industry. (See James, 1964; Langdon, 1964, for the institutionalized mentally retarded deaf; Anderson, Stevens and Stuckless, 1966, for vocational training for educable mentally retarded in residential schools for the deaf; and Salmon, 1950, for some approaches to the special needs of the deaf-blind worker.)

Awareness of the needs of multiply disabled deaf workers is growing. Two major reports (Crammatte and Miles, 1968; Blake, 1970) have been concerned with their problems, and a rationale for helping them is being developed. Blake's analysis of the problems involved in special treatment in a residential setting is of particular interest and more work in this area should be encouraged. At the same time, the services of regional vocational centers prepared to deal with multiply disabled deaf people can be provided with interpreters and consultants on the problems of deafness (Stewart, 1970). Many of the graver problems these people face

as adults could be minimized by adequate prevocational training in schools for deaf persons and such programs can be more developed in such schools (Langdon, 1964; Thompson, 1964; Schunhoff, 1964).

One area of special concern is that of the adult deaf patient in a psychiatric hospital. Outstanding work has been done in this respect by the New York group under J. D. Rainer and this program provides a model for other state agencies to develop similar programs (Rainer, Altshuler, Kallmann and Deming, 1963; Rainer and Altshuler, 1966; Altshuler and Rainer, 1969).

General Comments

From the foregoing discussions it can be seen that the general principles of program construction and operation for the various groups of multiply disabled deaf persons are fairly well known. Despite this fact, it appears that only the services for deaf-blind children of preschool and school-age are developing satisfactorily at this time. It is significant that this impetus has been largely a result of Federal support.

The principles which should be adhered to have been well expressed in Reynold's statement (1962) concerning removal of children from the regular classroom, "Move only as far as necessary; return as soon as feasible." (See Figure 1.) He has provided an excellent summary of the types of facilities necessary to provide a flexible set of programs to meet the needs of all disabled children, including the multiply disabled deaf child. For Class II* children, Figure 1 may be read as it stands;

*See page 6 for definitions of these terms.

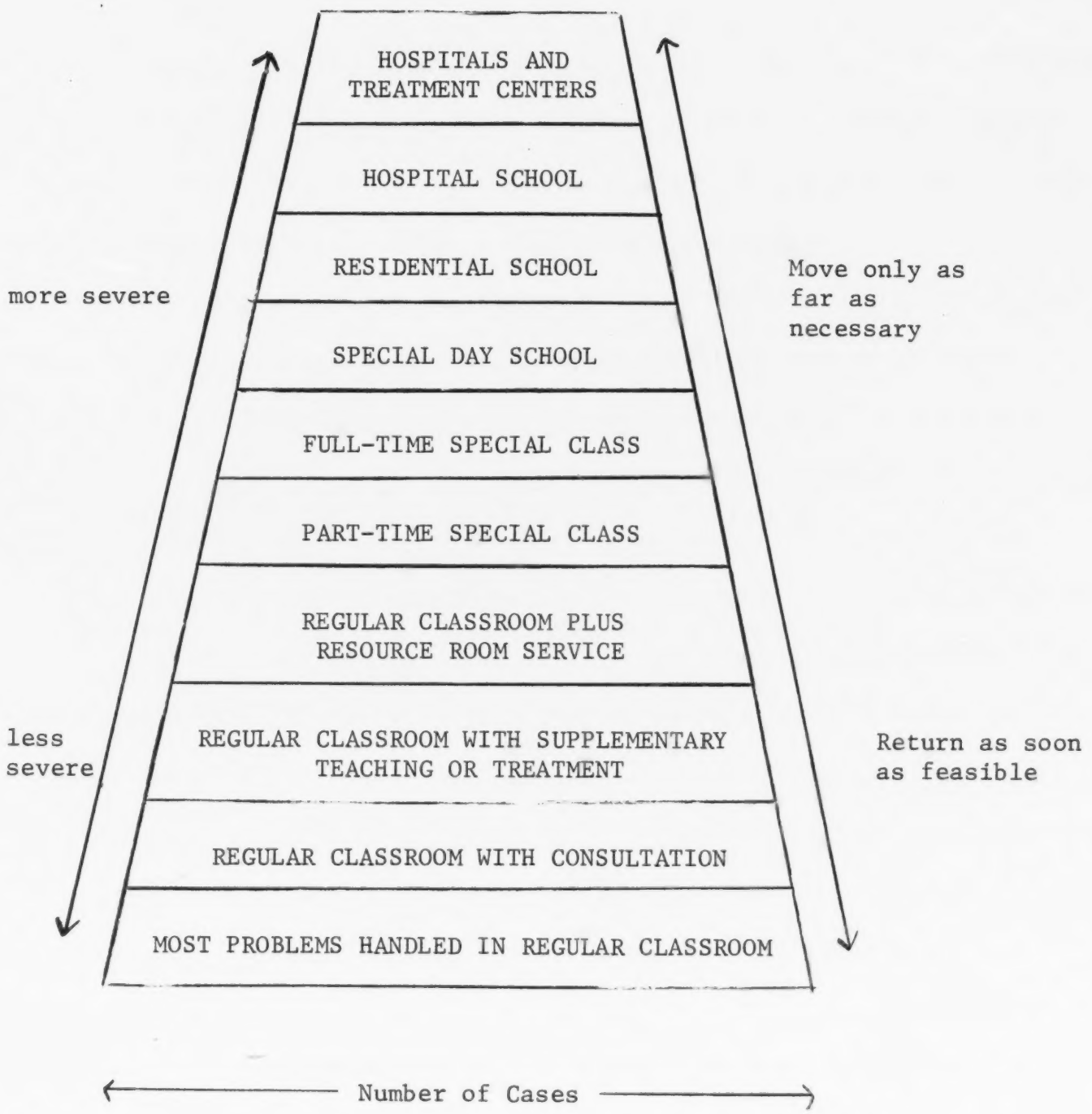

Figure 1. Taken from Maynard C. Reynolds; a framework for considering some issues in special education. Exceptional Children, 1962, 28, (7), p. 368.

for Class III* children "regular classroom" should be understood to mean "regular classroom in a day program or school for deaf children." In general, even severely multiply disabled children should be kept as much as possible with their homes and families, and as close as possible to the "normal" stream of education. This principle, wedded to a multi-level set of programs like that envisaged by Reynolds, and flexible placement under an Ascertainment Team system should enable maximum response to the needs of all multiply disabled deaf children.

Monaghan's paper (1964) provides a survey of the problems of placement of multiply disabled deaf children and recommends regional planning for their needs that:

a. makes available in either day classes or residential schools the special classes or tutoring needed and furnishes the numbers needed for homogenous grouping of children,

b. provides sufficient funds for programs,

c. brings together the specialists needed for the various areas of exceptionality,

d. recognizes that the educators concerned should be the leaders in placement and the ones who make decisions when the type of educational service is being determined,

e. provides teachers of deaf children trained to work with children possessing other disabilities, and

*See page 6 for definitions of these terms.

f. conducts research studies to develop, (1) better diagnostic techniques, (2) better placement procedures, (3) better teaching methods, (4) better teaching materials.

Recommendations

1. That existing facilities for preschool parent guidance and counselling of deaf children be utilized for multiply disabled deaf children, and that funds be provided by appropriate agencies for the expansion of regular staff numbers and provision of consulting specialists to meet the needs of the multiply disabled infant.

2. That personnel and funds be made available for the development of appropriate curricula, methods, and materials to enable regular classroom teachers of deaf children to better meet the needs of educable mentally retarded and learning disordered children.

3. That funds be made available for the development of programs for deaf trainable mentally retarded children in state institutions.

4. That research into the special prosthetic needs of cerebral palsied and other crippled deaf children be initiated, with a view to retaining as many of these children as possible in regular schools and classes for deaf students.

5. That funds be made available for the development of preventive mental hygiene curricula for schools and classes for deaf children.

6. That funds be made available to enable all residential schools for deaf students to establish adequate mental hygiene and therapeutic counselling centers. The shared services of such personnel should also be made available to public school systems.

7. That a number of regional centers for grossly emotionally disturbed deaf children be established. There are certain advantages to locating such centers within the structure of existing schools. The presently developing regional centers for deaf-blind children could be used as a model for such centers.

8. That the present program of regional centers for deaf-blind children be maintained and expanded as necessary.

9. That funds be made available to certain schools for deaf students and other institutions for the development of appropriate pre-vocational training programs for all classes of multiply disabled deaf children.

10. That consideration be given to the establishment of regional centers for vocational education and rehabilitation of multiply disabled deaf adolescents and adults.

11. That appropriate psychiatric facilities be made available for adult deaf individuals needing such services. The New York state program provides a model for such facilities.

Personnel

The problems involved in the diagnosis, ascertainment, and education of multiply disabled deaf children are very complex and no system of programs can meet their needs without an adequate supply of fully trained personnel--especially teachers. It is generally held that there is a shortage of teachers and other personnel, but the exact extent of this shortage cannot be documented until the necessary surveys of the incidence of the types of children they will serve have been conducted. (Costello,

1966; Anderson, Stevens and Stuckless, 1966; Weir, 1963; Johnson, 1967). The need for trained personnel will be considered under two broad areas: Teachers and ancillary personnel.

Teachers

Special training for teachers of multiply disabled deaf children must be designed to meet two needs--that of the child with multiple disabilities whose needs are best met by remaining in the "regular" classroom, and that of the child who requires such modifications of curricula and/or methods and materials as to necessitate his removal (if only for a time) from the "regular" classroom.

In our concern for the more severely disabled child, the need to equip teachers to better meet the requirements of all deaf children in their classes should not be overlooked. Modern educational practice is increasingly stressing the individualization of instruction, and the needs of most multiply disabled deaf children can be adequately met in "regular" classrooms if their teachers are given the techniques and understanding necessary to cope with such children. Learning disordered, EMR, most cerebral palsied and emotionally disturbed children can remain in the care of the regular school, if the teacher of the deaf child is given the necessary skills of what has variously been called "clinical teaching" (Henderson, 1960) or "diagnostic teaching" to develop specific programs to meet the individual needs of children.

Most courses for training teachers of deaf children already pay some attention to the problems of the multiply disabled deaf child, but specific

attention to the preparation of teachers for their responsibilities to these children needs to be increased through both pre- and in-service training. Guidelines for the skills required for individualizing teaching should be prepared to enable teacher training institutions to develop suitable courses and student teaching experiences. Special workshops and summer institutes should be developed to help the teacher already in the field.

Specialist training for the more grossly disabled child is also necessary. With the exception of the deaf-blind child, the provision of specially trained teachers for severely disabled deaf children is grossly inadequate at present. Only one program for training teachers of TMR deaf children presently exists (Costello, 1966). Many more centers need to begin developing programs to train teachers for these children and also those for the grossly emotionally disturbed deaf child and the severely cerebral palsied child. The need for a survey of the number of teachers required to meet the requirements of schools for deaf students and public school systems is urgent.

The training of such teachers cannot be divorced from teaching practice and close daily contact with these children. It is suggested that major centers developed for these children form close liaisons with university training and research centers to enable development of appropriate curricula. The program developed by Perkins School for the Blind and Boston University for the training of teachers of deaf-blind children may be cited as a model (Hoff, 1964; 1967).

Ancillary Personnel

It has been noted that the diagnosis and ascertainment of multiple disabilities is a complex operation requiring the skills of a wide range of specialists in audiology, otology, pediatrics, psychiatry, psychology, and other areas. As well as these, a range of "therapeutic" personnel from these professions and from clinical psychology, speech and physical therapy, counselling, vocational guidance, and other areas is required. All these personnel need varying degrees of training in the psychology and education of the deaf child. This could range from extensive one- and two-year courses in this area for people already qualified in another discipline to special institutes and summer or one-semester courses for the orientation of such specialists to deafness and its educational implications. It is suggested that the former longer training might be most appropriate for psychologists and audiologists, particularly for those who intend to undertake major responsibility in ascertainment and educational advisement. Other specialists, who usually operate in an ancillary or consultative role, could be equipped through briefer introduction to the problems of deafness. As well as training such specialists for work in educational settings, training of personnel from these professions in the problems and needs of the adult deaf client or patient should be provided for.

It is also suggested that the general model for the training of such specialists have a strong educational orientation, not medical, insofar as this is possible. For this reason, it seems advisable that centers responsible for training teachers should also undertake the training of

ancillary specialists. Daily experience with multiply disabled children in an educational setting should form an essential part of such training.

General Comments

Although the numbers cannot now be accurately specified, it is clear that there is a great shortage of personnel in all of the areas discussed here (Hurder, 1970). Training of appropriate specialists represents the most urgent need facing the education of multiply handicapped deaf children.

Recommendations

1. That a survey be conducted of the present and projected needs of numbers of teachers of multiply disabled deaf children and other personnel required for the establishment of adequate facilities for such children.

2. That workshop and summer institute programs be developed to provide regular classroom teachers of deaf pupils with greater skills in teaching techniques and materials development to allow them to better meet the individual needs of all deaf children, but particularly those with learning or behavior disorders and the educable mentally retarded deaf child.

3. That the number and type of training grants from appropriate agencies be increased to train sufficient teachers and other personnel to meet the present and projected needs of multiply disabled deaf children.

Prevention

The evidence of Vernon (1970) and others has shown that maternal rubella during pregnancy, Rh incompatibility between the blood of mother and fetus, and various traumas associated with premature delivery are among the major causes of multiple disabilities. Medical research can provide methods of dramatically reducing the occurrence of these conditions and continued emphasis should be placed upon such research. This has two aspects: (a) basic research in medicine, biology, biochemistry, gynecology and obstetrics, pediatrics, and other areas, to discover methods of lessening the incidence of these conditions, and (b) adequate funding for production of vaccines, etc., and for large-scale vaccination programs when vaccines are available.

Organized research and application programs could considerably reduce the incidence of multiple disabilities in a relatively short time.

Recommendations

1. That appropriate agencies be continually funded for basic research in areas related to medical prevention of multiply disabling conditions.

2. That funds be made available for suitable programs of mass publicity for such preventive measures as the rubella vaccination program, and other programs of maternal and infant health and welfare.

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